

WHAT IS CLAIMED IS:

1. A method of fabricating an electron source comprising the steps of:

fixing a first sealing member to a substrate
5 disposed with an electroconductive member, the first sealing member surrounding the electroconductive member excepting a portion of the electroconductive member;

abutting a chamber on the first sealing member to cover the electroconductive member excepting the
10 portion of the electroconductive member and form a hermetically sealed atmosphere between the substrate and the chamber;

supplying power to the portion of the electroconductive member to give part of the
15 electroconductive member covered with the chamber an electron-emitting function; and

removing the chamber from the substrate.

2. A method according to claim 1, wherein the
20 electroconductive member includes wiring lines and an electroconductive film with an electron-emitting area connected to the wiring lines.

3. A method according to claim 2, wherein a
25 plurality of electroconductive films are formed.

4. A method according to claim 3, wherein the

plurality of electroconductive films are interconnected
in a matrix shape by the wiring lines.

5 5. A method according to claim 1, wherein said
power supplying step is performed in a low pressure
atmosphere.

10 6. A method according to claim 1, wherein said
power supplying step is performed in a reducing gas
atmosphere.

15 7. A method according to claim 6, wherein the
reducing gas is hydrogen.

20 8. A method according to claim 1 wherein said
power supplying step is performed in an atmosphere
which contains organic material.

25 9. A method according to claim 1, wherein said
power supplying step includes a first power supplying
step to be performed in a reducing gas atmosphere and a
second power supplying step to be performed in an
atmosphere which contains organic material.

30 10. A method according to claim 1, wherein the
chamber has a gas inlet port and a gas exhaust port.

11. A method according to claim 1, wherein the first sealing member is frit glass.

12. A method according to claim 1, wherein the first sealing member includes adhesive and a support frame bonded to the substrate with adhesive.

13. A method according to claim 12, wherein the adhesive is frit glass.

14. A method according to claim 12, wherein the adhesive is indium or its alloy.

15. A method according to claim 1, wherein a second sealing member is interposed between the first sealing member and the chamber.

16. A method according to claim 15, wherein the second sealing member is made of organic elastic material.

17. A method of fabricating an image forming apparatus including a step of bonding the electron source and a substrate disposed with image forming members, wherein:

the electron source is fabricated by the method according to any one of claims 1 to 16.

18. A method according to claim 17, wherein the bonding step uses a third sealing member.

19. A method according to claim 18, further comprising a cleaning step of cleaning the first sealing member before the bonding step, by dismounting the chamber from the substrate of the electron source.

20. A method according to claim 19, wherein said cleaning step uses MEK (methyl-ethyl-ketone).

21. A method according to claim 19, wherein said cleaning step uses HFE (hydro-fluoro-ether).

22. A method according to claim 19, wherein said cleaning step uses MEK (methyl-ethyl-ketone) and HFE (hydro-fluoro-ether).

23. A method according to claim 18, wherein the third sealing member is second adhesive.

24. A method according to claim 23, wherein the second adhesive is frit glass.

25. A method according to claim 23, wherein the second adhesive is indium or its alloy.

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26. A method according to claim 17, wherein the bonding step of bonding the electron source and the substrate disposed with image forming members, is performed on the first sealing member.

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27. A system for fabricating an electron source to be used by the method according to any one of claims 1 to 16, comprising:

means for supporting the substrate disposed with the electroconductive member with an electrostatic chuck; and

means for making a predetermined atmosphere in the chamber abutted on the first sealing member.

28. A system according to claim 27, further comprising means for supplying power to the electroconductive member.

29. A method of supplying power to electroconductive members, comprising the steps of:
fixing a first sealing member to a substrate disposed with the electroconductive members, the first sealing member surrounding the electroconductive members excepting portions of the electroconductive members;

abutting a chamber on the first sealing member to cover the electroconductive members excepting the

portions of the electroconductive members and form a hermetically sealed atmosphere between the substrate and the chamber;

supplying power to the portions of the
5 electroconductive members; and
removing the chamber from the substrate.

30. A method according to claim 29, wherein a
10 second sealing member is disposed in an area where the
chamber is abutted on the first sealing member.

31. A method according to claim 29 or 30, wherein
a portion of each electroconductive member covered with
the chamber has an electron-emitting function, and the
15 electron-function is inspected by emitting electrons by
supplying power to the electroconductive member.

32. A method according to claim 31, wherein the
20 power supply is performed in a low pressure atmosphere.

33. A method of fabricating a display device
provided with an electron source substrate on which
there are formed a matrix wiring of rows and columns,
output leads arranged at the peripheral of the matrix
25 wiring and coupled to the matrix wiring and electron-
emitting devices connected to the matrix wiring,
fixing a sealing member onto the electron source

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substrate, a lower edge of the sealing member
traversing over the output leads and surrounding the
matrix wiring in a closed loop so that a portion of
each output lead extends to the outside of the sealing
5 member and the lower edge of, the sealing member is
bonded to the surface of the electron source substrate
by an adhesive,

abutting a chamber on an upper edge of the sealing
member to form a hermetically seated space within an
10 enclosure formed by the electron source substrate,
sealing member and chamber,

evacuating the enclosure by exhausting an air
through a conduit provided in the chamber to bring the
space within the enclosure into a vacuum condition,

15 supplying a power from the outside of the
enclosure through the output leads and matrix wiring to
the electron-emitting devices in the space of vacuum-
condition within the enclosure for processing the
electron-emitting devices, and

20 removing the chamber and, bonding a face plate
onto the sealing member.

34. A method according to claim 33, wherein said
adhesive is frit glass, indium or indium-alloy.

25 35. A method according to claim 33 or 34,
wherein an elastic member is placed at an

interface between the upper edge of the sealing member and the chamber where abutting the chamber on the upper edge of the sealing member.

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